

**Supplemental Specification
2005 Standard Specification Book**

SECTION 13552M

RAMP METER SIGNALS AND SIGNING

Delete Article 1.1 paragraph A and replace with the following:

- A. Materials and procedures for installing conduit, junction boxes, signal heads, signing, mounting brackets, wire, grounding, and foundations. Install all state furnished items. Includes all materials, labor, workmanship, equipment, testing, documentation, and incidental items required to install and test a complete and operational Ramp Meter system as shown in the contract.

Delete Article 1.3 and replace with the following:

- A. AASHTO Standard Specifications for Highway Bridges
- B. AASHTO Standard Specifications for Highway Bridges: Division II - Construction, Section 5: Drilled Piles and Shafts
- C. AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals (current edition)
- D. American Iron and Steel Institute (AISI)
- E. American National Standards Institute (ANSI)
- F. Manual on Uniform Traffic Control Devices (MUTCD)
- G. National Electrical Code (NEC)
- H. Underwriters Laboratories (UL)

Delete Article 1.4 and replace with the following:

1.4 SUBMITTALS

- A. Provide samples of materials to the Engineer for approval when requested.

- B. Provide all of the following submittals as described in Section 13551:
 - 1. Contractor Furnished Material and Equipment Lists
 - 2. Test Reports for the Cable & Conductor Test, the Local Field Operations Test, and the 30 Day Burn-In Test
 - 3. Completion Notice
 - 4. Compliance Certificate
 - 5. Manufacturer's Equipment Documentation
 - 6. As-Built Drawings

Delete Article 2.2 and replace with the following:

2.2 RAMP METER POLE MOUNT SIGNAL ASSEMBLY

- A. One 8-inch section signal head with red LED Module for enforcement. No back plate required.
- B. All signal heads: Refer to Section 02892. Louvered back plate required.
- C. Regulatory Sign: MUTCD R10-6; 24-inch x 36-inch.
- D. "1 Vehicle Per Green" and "2 Vehicles Per Green" Signs: 24 inch x 18 inch. Refer to AT Series Standard Drawings.
- E. All signal head housings: Highway Yellow with hoods.
- F. Signal Pole: Refer to Section 02892 and SL Series Standard Drawings.
- G. Two "Z" bars on the back of the sign to support against thrown snow. Refer to SN Series Standard Drawings.

Delete Article 2.3 and replace with the following:

2.3 RAMP METER MAST ARM SIGNAL ASSEMBLY

- A. All 12-inch signal heads: Refer to Section 02892. Louvered back plate required.
- B. "1 Vehicle Per Green Each Lane" and "2 Vehicles Per Green Each Lane" Signs: 60 inch x 36 inch. Refer to AT Series Standard Drawings.
- C. All signal head housings: Highway Yellow with hoods.
- D. Signal Pole: Refer to SL Series Standard Drawings.

Delete Article 2.4 and replace with the following:

2.4 ADVANCE FLASHING BEACON SIGN

- A. Two 8-inch signal heads with yellow LED Module: Refer to Section 02892. No back plate required.
- B. Warning Sign: WS3-3, 36-inch x 36-inch. Refer to AT Series Standard Drawings.
- C. “Metering When Flashing” Sign: 30-inch x 24-inch black on yellow. Refer to AT Series Standard Drawings.
- D. All signal head housings: Highway Yellow with hoods.
- E. Signal Pole: Refer to Section 02892 and SL Series Standard Drawings.
- F. Two “Z” bars on the back of the sign to support against thrown snow. Refer to SN Series Standard Drawings.

Delete Article 2.5 and replace with the following:

2.5 BOLTS AND NUTS

- A. Follow Section 02892.
- B. Follow Section 13551 for Anchor Bolts.

Delete Article 2.6 and replace with the following:

2.6 WIRE

- A. Follow Section 02892 for signal cable specifications.

Delete Article 2.7 paragraph B.

Add the following to Article 2.8:

- C. Use 240-volt 400 watt luminaires.

Delete Article 3.1 paragraph A and replace with the following:

- A. Load, transport, and install all state-furnished materials per the manufacturer’s instructions and as shown in the contract.

Delete Article 3.1 paragraph C and replace with the following:

- C. Install all wiring, conduit, and junction boxes as shown in the contract.
 - 1. Field locate all conduit and junction boxes to avoid drainage areas and steep slopes whenever possible.
 - 2. Protect existing conductors while installing new conductors.

Delete Article 3.1 paragraph F and replace with the following:

- F. Clean equipment exterior of all rust and mill scale, dirt, oil, grease and other foreign substances after installation.

Delete Article 3.2 and replace with the following:

3.2 FOUNDATION

- A. Conform to AASHTO Standard Specifications for Highway Bridges for all material and workmanship.
- B. Verify that the installation locations of the signal heads, mast arm, pole, and foundation have no conflict with existing utilities before work. Comply with all utility and Blue Stakes requirements.
- C. See AT Series Standard Drawings for ramp meter signal assembly and advance flashing beacon assembly details and placement.
- D. Excavate for foundations. Refer to Section 13551.
- E. Construct caissons to conform to AASHTO Standard Specifications for Highway Bridges: Division II - Construction, Section 5: Drilled Piles and Shafts. If formwork is required during drilling, the forms may be withdrawn during concrete placement.
 - 1. Drill caissons into either native soil or compacted fill.
 - 2. Cast the top of the caisson against the formwork for appearance.
- F. Place concrete directly into the excavation. Use minimum forming.
- G. Tie reinforcing steel and conduit securely in place. Do not weld reinforcing steel, conduit, or anchor bolts.
- H. Install reinforcing steel according to Section 03211.
- I. Cap all conduits before placing concrete.

- J. Install weep hole in foundation per SL Series Standard Drawings.

Delete Article 3.4 paragraph C and replace with the following:

- C. Install ground rod per contract (NEC 250).

Delete Article 3.8 paragraphs B through E and replace with the following:

- B. Install directed and veiled optically programmed signals following the manufacturer's instructions. Mask each section of the signal with manufacturer recommended materials.
- C. Use louvered back plates on those signal heads indicated. Use a minimum of four 0.12-inch stainless steel screws per section to mount the back plates, or according to manufacturer's instructions.
- D. Install ramp meter signal head toward vehicles approaching the intersection stop-bar. Side Signal Head: axis or indication parallel to roadway surface.

Delete Article 3.9 paragraphs B and C and replace with the following:

- B. Refer to AT Series Standard Drawings for location of Presence and Discharge Loop.
- C. Consult the Engineer for saw cut loops.

Delete Article 3.11 paragraph B and replace with the following:

- B. Perform the Local Field Operations Test after all ramp meter elements, equipment and hardware, power supply, detection device (Refer to Section 13591) and connecting cabling have been installed.
 - 1. Complete the Local Field Operations Test for Ramp Meters using the required form. Obtain UDOT's newest version at time of bid of the form from the UDOT Web site. Refer to <http://www.udot.utah.gov/index.php/m=c/tid=719>.
 - 2. Perform testing after all construction for the site has been completed and the final road surface has been constructed.
 - a. It is not necessary for the communications installation to be completed at the time of testing.
 - b. It is not necessary that all stations be tested concurrently.